REWIEWER´S OPINION OF FINAL THESIS

I. IDENTIFICATION DATA

Thesis Name: Photovoltaic System for Company or Household – Feasibility and Optimization
Author´s Name: Gundogdu Oguzhan
Type of Thesis: Master
Faculty/Institute: Faculty of Electrical Engineering (FEE)
Department: Faculty of Economics, Management and Humanities
Thesis rewiewer: Ing. Jiří Kobosil, CSc
Rewiewer´s department: External

II: EVALUATION OF INDIVIDUAL CRITERIA

Assignment **challenging**

Evaulation of thesis difficulty of assignment

The assignment was demanding due the need of combination technical and economic knowledge.

Satisfaction of Assignment **technical part - fufilled**
economic part – fulfilled only partially

Assess that handed thesis meets assignment. Present points of assignment that fell short or were extended. Try to assess importance, impact or cause of each shortcoming.

The technical part fulfiled the assigned task completely. The 4 options for technical solutions are processed perfectly.

The economic part is not sufficiently processed, and the result does not provide a sufficient basis for verifying the effectiveness of the project. The accuracy of the economic calculations could not be verified, because they are not listed in the appendix of the thesis.

Method of Conception **technical part – correct**
economic part - the chosen method provides only a partial result

Assess that student has chosen correct approach or solution methods.

The student has chosen from the two options offered - Company or Household - for the project of a photovoltaic power plant. This is a specific project on a specific plot of land near Santiago. Partial technical options for individual elements were evaluated correctly.

However, the overall economic evaluation is based on the theoretical assumption that the calculated minimum price of electricity from a given project can increase by 8% per year for the entire life of the source, which is not realistic. Nor is there any description of possible support for the production of electricity from photovoltaics. The calculation does not respect the real market wholesale price of electricity in Chile, which may be completely different, as may be its year-on-year growth. The assumption that an 8% annual increase in the price of electricity from 2018 to 2020 will take another 25 years is unrealistic. Finally, it is not clear that the project is effective or suitable for implementation.

Technical level **C - good**

Assess level of thesis speciality, use of knowledge gained by study and by expert literature, use of sources and data gained by expierience.

This is not a special task, but an evaluation of a specific photovoltaic power plant project. The student used in the elaboration of the thesis his knowledge from the study.

Formal and language level, scope of thesis **B – very good**

Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.

The form is correct, and the language level is sufficient. Formal errors are very rare. However, the fact that in the text some tables do not contain total rows, and their values are cited in the text affects it's overall comprehensibility. For example, on page 61, total losses LV+MV AC, or on page 66 is not the total value of investment costs of individual variants, i. e. more than EUR 8 mln, only their specific value per installed MWp is given.

Selection of sources, citation correctness **B – very good**

Present your opinion to student activity when obtaining and uses study materials for thesis creation. Characterize the selection of sources. Assess that student used all relevant sources. Verify that all used elements are correctly distinguished from own results and thoughts. Assess that citation ethics has not been breached and that all bibliographic citations are complete and in accordance with citiation convention and standards.

The amount of materials studied was broad, and they were used correctly. However, I was surprised that no specific idea of connection to the distribution network was included for this particular project.

Additional commentary and evaluation **C - good**

Present your opinion to achive primary goals of thesis, e. g. level of theoretical results, level of functionality af technical or software conception, publication performance, experimental dexterity etc.

The thesis represents a specific solution and the project would be fully functional in practice, but its effectiveness has not been sufficiently verified.

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

Summarize thesis aspects that swayed your final evaluation. Please present apt questions which student should answer during the defense.

The diploma thesis deals with the optimization of the 6.3 MW photovoltaic power plant project on a specific plot of land near the capital of Chile, Santiago. Four technical variants are elaborated in detail, except for the connection to the distribution system. This part of the paper is at a very good level. However, the economic evaluation of this project is based only on the theoretical assumption that the determined minimum price of electricity (for NPV = 0) can grow annually by 7% to 9% regardless of market conditions in the wholesale electricity market in Chile, and specific conditions to support electricity production from renewable sources (with annual inflation less than 3%). A detailed economic calculation is not given in the appendix either. Therefore, I recommend to the student, when defending the thesis:

1) Show a detailed Excel spreadsheet of the economic calculation with annual input and output values.

2) Analyze the long-term development of wholesale electricity prices in Chile, not just the period 2018-2020, from which it was based for a long-term outlook.

3) Make a possible correction to the economic calculation and demonstrate whether the project will be profitable under realistic economic conditions on the wholesale electricity market in Chile.

I evaluate this thesis with classification grade **C - good**

Date: 8.6.2020 Signature: